

ART. II.—*Vitality of White Races in Low Latitudes.*

By C. H. WICKENS.

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One of the visitors to the Pan-Pacific Science Congress held in Australia in 1923 was Professor Ellsworth Huntington, Research Associate in Geography in Yale University. On his return to America he published an account of his journey under the title "West of the Pacific," in which he dealt with various aspects of Chosen, Japan, China, Java, and Australia, and this paper is concerned with that part of his book in which he uses Australian statistical data, and especially data concerning Queensland, to support a theory of his that persons of white race born in low latitudes have less physical vitality than similar persons born in temperate climates. Whether his theory is true or false, the author will not undertake to say; all he wishes to do is to call attention to the nature and extent of the evidence available in respect of Queensland, and to suggest that this evidence does not appear to support the theory.

Professor Huntington points out that during the eight years immediately preceding the War, the crude death rate was lower in Australia than in any country in the world, except New Zealand, and that the Queensland rate was as low as that of any State in Australia. He also shows that even when allowance is made for difference in age distribution, Queensland has still a lower death rate than the healthiest country in Europe. He says that when the low death rate of Queensland was first brought to his attention, he thought there must be some mistake, but that careful inquiry had convinced him that the records are essentially reliable. He also refers to the evidence of good health in Queensland furnished by the investigations of the Institute of Tropical Medicine at Townsville, and by the Bulletin on Tropical Australia issued by the Commonwealth Bureau of Census and Statistics.

Having thus examined and found satisfactory the evidence of vitality furnished in respect of persons *living* in Queensland, he next investigates data concerning those born in that State, and comes to the conclusion that "although the people who go to Queensland are so healthy that they reduce the general death rate to a very low level, their children for some reason or other are less healthy than are those born in the more southerly parts of Australia or in the Old Country." On the question of fertility in Queensland, he notices the relatively high birth rate of that State as compared with the rest of Australia, and says that "as in the case of deaths, the favourable condition is not due to the people who are born in Queensland, but to those who come hither

from other regions." He thus considers it as established that birth in Queensland of persons of white race increases the rate of mortality and decreases the fertility of the race. The evidence which he adduces to prove this twofold conclusion are two statistical tables, the one on page 364, the other on page 366 of the book under review, both based on data obtained from the Commonwealth Statistician.

The first of these is an interesting table in which he shows, from calculations that he has made on the basis of figures supplied at his request, that for ages last birthday 15 to 49 inclusive, the rate of mortality for each sex of persons born in Queensland was sensibly higher than for Australian residents born in Victoria, New South Wales, England or Scotland, and that such is the case whether the State of residence is Victoria, New South Wales or Queensland. The figures supplied to the author gave death rates for quinquennial ages which he has summarised for the range 15-49, by using a "standard population." Exactly what standard he has used he does not indicate. His published results, however, appear to be in reasonable accord with the data supplied to him. Covering as they do deaths during the three years 1920, 1921, and 1922, of persons aged last birthday 15 to 49 inclusive, they are derived from births which occurred in the period from 1870 to 1907 inclusive, and consequently take no account of the remarkable improvement in infant and child mortality which has taken place in Queensland during the past fifteen years. In only one year in that period of fifteen has the rate of infant mortality—the number of deaths under one year per 1000 births—been higher in Queensland than the Australian average. That was in 1919, a year in which Queensland experienced a drought much severer than that experienced in other States. For the whole period of 15 years the Australian average rate was 7% higher than that for Queensland, and the Queensland rate for 1925 of 45 per 1000 births is the lowest ever recorded for an Australian State, and not much in excess of the remarkable rate of 40 per 1000 births recorded by New Zealand for the same year. These figures show that for the first year of life at all events it cannot be said that under modern conditions the Queensland born are less healthy than those born in the more southerly parts of Australia.

Fortunately, it is not necessary to stop here, for it is possible to analyse the death rates to age 9 last birthday, inclusive of persons born in the several States. This investigation was based on the deaths which occurred at these ages during the three years 1920, 1921, and 1922. The mortality for these three years indicated that for Australia as a whole out of every 1000 males born, 106 would fail to reach the age of 10, the corresponding number for females being 87 out of every 1000 born. The figures for Queensland for the same period were 102 failures out of every 1000 males born, and 84 failures out of every 1000 females born, about 3½% better than the average Australian rate in both cases.

The only State showing a better result than that for Queensland is Tasmania, which out of 1000 male births had only 101 failures to reach the age of 10 compared with 102 for Queensland. For females, however, the Tasmanian failures numbered 86, compared with only 84 in Queensland.

For the purposes of this paper a series of triennial results for Queensland, covering the five triennia ending with the year 1925 have been taken out. These give the failures to reach age 10 out of 1000 males born as 116 for 1911-13, 112 for 1914-16, 106 for 1917-19, 102 for 1920-22, as already quoted, and only 87 for 1923-25. In the case of females, the results are even more striking, the failures to reach age 10 out of 1000 females born being 101 for 1911-13, 96 for 1914-16, 88 for 1917-19, 84 as already mentioned for 1920-22, and only 70 for 1923-25. The author is at present engaged in taking out a similar series of triennial rates for the other States, but these are not yet completed. The heavy part of the mortality under age 10 is, however, that under age 1, and data in respect of this are available, indicating for Queensland for the triennium 1923-25 an average for the sexes combined of 50 failures to reach age 1 per 1000 births, compared with 57 for Australia as a whole; that is, the Queensland rate was more than 12% better than that for all Australia.

While on this subject of progressive improvement in mortality rates, reference may be made here to the marked improvement in rates of mortality at all ages that has taken place in Queensland since the 'eighties, when that State was quoted as the shocking example in the matter of high mortality in Australia. An examination of the crude rates of mortality for that decade discloses the fact that in each year the male crude rate for Queensland was consistently higher than the Australian rate for the same year, and in one year (1884) there was an excess of as much as 50%. An examination of the Queensland migration records shows that in that decade there was a larger net immigration of males into Queensland than in any similar period in the history of the State. This suggests that the process of acclimatisation was expensive in terms of human lives, and does not bear out Professor Huntington's view that the new arrival was the select of the select. In fact, many of the deaths which he quotes in his table would represent first generation Australians, the offspring of these immigrants of the 'eighties, whereas the progressively improving results that have been given for recent years are increasingly second or third generation Queenslanders. Concerning the population resident in Queensland, it may be mentioned that the expectation of life at date of birth for 1881-90 was 41.3 years for males, and 49.8 years for females; for 1891-1900 it was 49.5 years for males and 55.8 years for females, for 1901-1910 it was 54.2 years for males and 59.3 years for females. For the three years 1920-22 complete life tables for Queensland have not yet been compiled, but there is evidence of a corresponding improvement in both sexes.

This consistent and rapid increase in the expectation of life at date of birth was of course associated with an increasing proportion of Queensland born in the population. A comparison of these expectations of life with those for Australia as a whole indicates that whereas for 1881-90 the Queensland male expectation at date of birth fell short of that for Australia by more than 12%, for 1901-10 the excess was less than 2%, and the indications for 1920-22 are that the Queensland expectation will exceed that for Australia. There has been a marked improvement in mortality rates throughout Australia, but the improvement has been more marked in Queensland than in the rest of Australia, although Queensland has been the only part of Australia that has had any serious addition of Queensland-born persons to its numbers. In all the circumstances it may be claimed that the weight of evidence is against Professor Huntington's verdict concerning the vitality of the Queensland born.

We now come to the question of fertility, which Professor Huntington claims decreases with birth in Queensland. The only evidence on this point which he gives in his book is the table mentioned as being on page 366, and the conclusion which he draws from the figures there quoted is palpably fallacious. He has there a statement showing the total issue at time of death of persons of various birth-places, who died in Australia during the year 1921, and because those born in Queensland who died in that year had smaller average issue than any of the others which he records, he draws the conclusion that the Queensland-born were less fertile than the others. What he has failed to remember is that the issue of a person at date of death is a function of age, and that in the case of deaths in Australia of persons who had been born in Germany or Ireland or Scotland or England, the proportion of advanced age and, consequently, with maximum families will be much larger than in the case of those born in Australia, and that in consequence of the rapid comparatively recent growth in the number of Queensland born the proportion of deceased Queensland born with maximum issue will be smaller than in some of the older States.

The case for the fertility of the Queensland-born, however, does not depend solely on the negative process of proving the invalidity of Professor Huntington's evidence. There is ample positive evidence that the fertility of the Queensland-born females if not high, is as least as high as that of the females of corresponding age born elsewhere than in Queensland, and resident in Australia at the Census of 1921. The following table, which deals with place of residence, not place of birth, is of interest, and is included partly because the data in respect of the issue of males according to birthplace is not available, and partly because it furnishes some interesting comparisons with birthplace data deduced later.

Average Issue at Census of 1921.

Age	Husbands resident in		Wives resident in	
	Queensland	Australia	Queensland	Australia
25 - 29	1.38	1.32	1.94	1.78
30 - 34	2.17	2.06	2.82	2.59
35 - 39	2.95	2.77	3.63	3.32
40 - 44	3.67	3.40	4.29	3.84
45 - 49	4.35	3.91	4.70	4.19
50 - 54	4.89	4.34	5.28	4.57
55 - 59	5.45	4.86	5.79	5.12
60 - 64	5.95	5.42	6.32	5.74
65 - 69	6.55	6.04	6.58	6.25

These figures indicate that the average issue at every age was markedly higher in Queensland than in the rest of Australia at the Census of 1921. There are, however, interesting supplementary figures relating to average issue of wives according to age and birthplace. These are as follows:—

Average Issue of Wives Resident in Australia at Census of 1921.

Age	Wives born in				
	Queensland	Australia	British Isles	Europe	All Birth Places
25 - 29	1.98	1.84	1.32	1.36	1.78
30 - 34	2.86	2.66	2.04	2.09	2.59
35 - 39	3.69	3.44	2.70	2.76	3.32
40 - 44	4.36	3.97	3.30	3.36	3.84
45 - 49	4.74	4.30	3.75	3.84	4.19
50 - 54	5.30	4.64	4.28	4.36	4.57
55 - 59	5.92	5.21	4.79	4.88	5.12
60 - 64	6.71	5.93	5.28	5.37	5.74
65 - 69	7.38	6.61	5.80	5.88	6.25

We have here all the important ages, and at every one of them there is a larger issue for the Queensland-born wife than for the wife born from any other of the quoted birthplaces. A comparison of the issue of Queensland-born wives shown in the last table with the issue of wives of all birthplaces resident in Queensland, as shown in the table before that indicates that *birth* in Queensland connotes in respect of a wife a somewhat higher issue than mere *residence* in Queensland, which appears to be contrary to Professor Huntington's theory.

It will be convenient here to call attention again to Professor Huntington's evidence in respect of Queensland's fertility. He has there committed that statistical fallacy sometimes known as the "fallacy of aggregates," an error by no means uncommon, and not always immediately evident. It may be illustrated by

an example mentioned by an English Registrar-General, who said that statistics showed that the occupation of farmer had a death rate, over all, higher than that for the general population, but that when death rates for successive age groups were compared, the farmer's rate in each age group was less than that of the general population. The reason for the farmer's higher death-rate when age was not considered, was that there were so many more farmers at the advanced ages at which the death rates were high. In other words, the farmer's apparently high death rate was due to his really low death rate. In the case of fertility, the results of the 1921 Census indicate that, although the issue of Queensland-born wives is high in each age group, yet, if the results are taken irrespective of age, Queensland-born wives have an average issue over all of 3.18; Australian-born wives, 3.30; wives born in the British Isles, 3.46; wives born in Europe, including the British Isles, 3.53; and wives of all birthplaces, 3.34. As already explained, this is due to the larger proportion of Queensland-born wives in the lower age groups, where the families are in all cases smaller.

The data so far dealt with concern the whole of Queensland, but not more than 25% of the population of Queensland is actually within the tropics. The southern boundary of Queensland is approximately 29° South latitude, so that the whole State can be classed as being in low latitudes, if not altogether within the tropics. A special Census Bulletin dealing with Tropical Australia was issued in connection with the Census of 1921, and this was supplemented later by the issue of a special Part of the Census Report (Part XXVI.) on the same subject as well as by tropical sections of Part XXVIII., Families. It is unnecessary to refer to the details contained therein, but some figures comparing the issue of Queensland-born wives resident in *tropical Australia* with the corresponding issue of wives born elsewhere, but also resident in tropical Australia, may be quoted.

*Average Issue of Wives resident in Tropical Australia at
Census of 1921.*

Age	Wives born in				
	Queensland	Australia	British Isles	Europe	All Birth Places
25 - 29	2.19	2.14	1.62	1.75	2.09
30 - 34	3.16	3.08	2.62	2.79	3.04
35 - 39	4.01	3.87	3.61	3.64	3.81
40 - 44	4.79	4.62	4.13	4.21	4.45
45 - 49	5.11	4.89	4.68	4.71	4.79
50 - 54	5.38	5.26	5.23	5.27	5.24
55 - 59	5.98	5.82	5.69	5.73	5.75
60 - 64	5.76	5.92	6.09	6.20	6.11
65 - 69	6.77	7.05	5.71	5.90	6.01

Owing to the relative smallness of the numbers involved, the rates here are somewhat less regular than those previously quoted, but up to age 60 the total issue of Queensland born wives predominates, and for all birthplaces the total issue is in general up to age 65 higher for tropical Australia than for all Australia. Data concerning wives *born* in tropical Australia are, unfortunately, not available.

There is a further small point in Professor Huntington's criticism of Queensland to which reference may be made. This is a statement by him that there is a tendency for numbers of Queensland females of adult age to get out of Queensland, with the view apparently of so avoiding the climatic disabilities of that State. This statement appears to be based mainly on the fact that when the Census data for the Queensland population according to sex and age are examined, it is seen that for early ages the numbers in each sex are fairly equal, but that at later ages there tends to be a preponderance of males. His conclusion, however, is quite wide of the mark. Like all new and progressive countries, Queensland has an excess of males, an excess which with an increasing number of births per annum is rapidly disappearing. This disappearance is of course most marked in the younger ages, which are mainly recruited from the local births in which there is little difference in the proportion of the sexes. With the lapse of time the ages having a marked male preponderance become higher and higher, and in the absence of heavy immigration eventually disappear. The statistical peculiarity to which he refers is thus due, in the main, not to a marked exit of adult females, but to the influx by birth of infant females and their subsequent retention in the State. This is indicated by the following table, which shows at the Census of 1921 the numbers of each sex of Queensland-born persons who were resident in Queensland at the date of the Census. At all ages the numbers approximate equality, the excess of males being most marked at the younger ages—not, as suggested by Professor Huntington, at the older.

The total number of Queensland-born residents of Queensland at the Census of 1921 was thus almost equally divided as regards sex, and approximate equality was in evidence in each age group, the most marked deviation being the excess of males under 5 years, due mainly to the normal excess of males at birth. Data concerning the birthplaces of residents of other parts of Australia at the Census of 1921 indicate, however, that there is a slightly higher migration of Queensland-born females than of Queensland-born males to the other States. The number of Queensland-born persons recorded at the Census of 1921 in States other than Queensland was 42,953, of which 20,142 were males and 22,811 females. In other words, at the Census of 1921 about 9¼% of the Queensland-born females resident in Australia were living outside their State of birth, and about 8¼% of Queensland-born males. These proportions for residence outside the State of birth are less than for any State of birth except New South Wales,

Queensland-born Population Recorded in Queensland at Census of 4th April, 1921

Age Group	Queensland born population recorded in Queensland.	
	Males	Females
0 - 4	40,106	38,162
5 - 9	36,972	36,175
10 - 14	29,755	28,695
15 - 19	24,430	24,370
20 - 24	22,703	24,407
25 - 29	21,201	22,719
30 - 34	19,092	19,835
35 - 39	13,229	13,478
40 - 44	9,887	9,751
45 - 49	7,292	7,262
50 - 54	5,424	5,140
55 - 59	2,645	2,554
60 - 64	1,086	1,103
65 and over	491	577
Not stated	325	319
TOTAL	234,638	234,547

the average for all Australia being $11\frac{1}{2}\%$ for males and $10\frac{3}{4}\%$ for females. That is to say, there is a smaller rate of migration from the State of birth among the Queensland-born of either sex than is the case with those born in any other State of Australia, except New South Wales. These are the figures for 1921. In 1911 the position was very similar, Queensland's figures being 8% for males and 9% for females, and ranking still second to New South Wales, whereas the figures for all Australia were $12\frac{1}{2}\%$ for males and $10\frac{3}{4}\%$ for females. A slight female preponderance in the migration of the native-born is not peculiar to Queensland, but is also in evidence in Western Australia, and, to a larger extent, in Tasmania.

Summing up the position, it would appear that in depending on Queensland to help in the establishment of his theory, Professor Huntington has put his money on the wrong horse. If his theory is true, there would appear to be some remarkable counterbalancing advantages, geographical, climatic or other, in the case of Queensland, which must be counted to that State as a most valuable asset. As stated earlier, the immediate object of this paper is not that of proving either the truth or the falsity of Professor Huntington's general theory, but of showing that available Queensland data really furnish no evidence in its favour under modern conditions. Whether the further extension of white population into the tropical portions of the State will give equally favourable results has yet to be ascertained, but the data available in this connection are of such a nature as to warrant expectations of satisfactory progress.